

AMT-A0073 17 GHz to 18 GHz 5 Bit Variable Gain Amplifier w SPI Data Sheet



Features

- 17 GHz to 18 GHz Frequency Range
- 5 Bit 30 dB Variable Gain Range
- Typical Gain range +8 to +38 dB
- Gain Flatness $< \pm 1$ dB
- Typical P1dB $> +28$ dBm
- Internally Regulated
- Operates from a Single Supply
- Unconditionally Stable
- State-of-the-Art GaAs Technology



Description

The AMT-A0073 is a Variable gain medium power amplifier with 5-Bit Serial Control 30 dB digital attenuator. The performance is achieved through the use of AMTI's proprietary technology. The VGA is a highly integrated module with fast digital attenuator and medium power amplifier. The RF input output are internally matched to 50 Ohms and DC blocked. The AMT-A0073 is ideal for use where variable amplification is required in a Hi-Rel communications system for Commercial or Military applications

Applications

- Receiver front end,
- Communication systems
- Microwave Radio systems
- Test Equipment

MAXIMUM RATINGS¹

Parameter	Symbol	Units	MIN	MAX
Operating Temperature – Case	T_{MO}	$^{\circ}C$	-30	+85
Storage Temperature - Case	T_{MS}	$^{\circ}C$	-55	+150
RF Input power (CW)	P_{in}	dBm		+30
Die $T_{Junction}$	T_J	$^{\circ}C$		+150
Positive Supply Voltage	V_{+SS}	V		+8.5

Note: Control Pins should not be floating while biased

1.Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL SPECIFICATIONS @ 23°C

Parameter	Conditions	Units	MIN	Typical	MAX
Frequency Range		GHz	17		18
Gain	Small Signal with 0 Attenuation	dB	36	38	
Gain Flatness	Small Signal with 0 Attenuation	dB		±1	
Input Power	CW, without damage	dBm	+17		
Output Power (P1dB)	1 dB compression point @ 17.2 GHz	dBm	25	28	
OIP3	OIP3 measured @ 17.2 GHz Two tone F1-F2=10MHz	dB		35	
Control Setup Time	Serial control TTL CMOS Setup Time	nS		90	110
RF Input Impedance	Reference to 50 ohms VSWR			1.8:1	2.0:1
RF Output Impedance	Reference to 50 ohms			1:9:1	2.0:1
Stability Factor K	Unconditionally Stable		1		
Stability Factor B1	Unconditionally Stable		0		
Supply Voltage Positive:		V		+8	
Supply Current Positive:		mA		550	

Notes:

1/ Unconditional Stability: ($K > 1$) and ($B1 > 0$)

Customized configurations of the above specifications are available

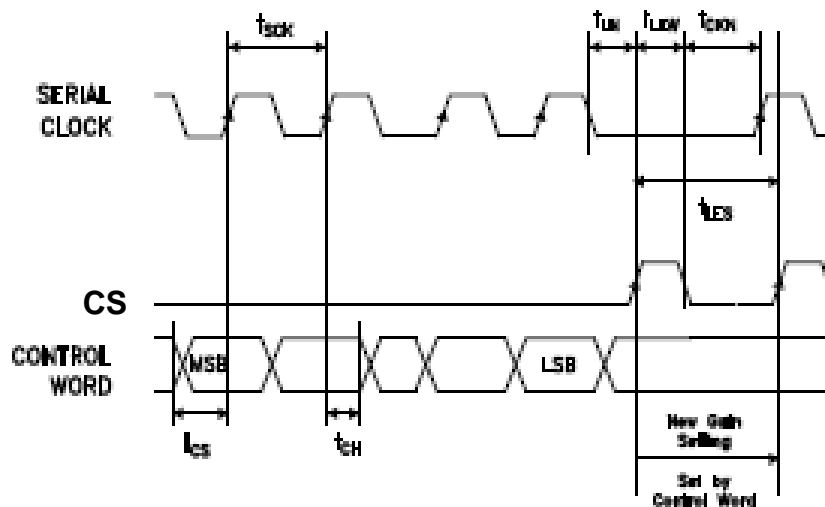
5-BIT Digital Attenuator

The AMT-A0073 contains a 3-wire SPI compatible interface as follows:

- **DATA** - A 6-bit serial word must be loaded MSB with the first bit ignored
- **CLK** - The positive-edge sensitive clock with clean transition
- **CS** - Chip Select when high the 5-bit data in the serial input register is transferred to the attenuator. Also when CS is high CLK is masked to prevent data transition during output loading

For all modes of operations, the state will stay constant while CS is kept low

Serial Control Interface

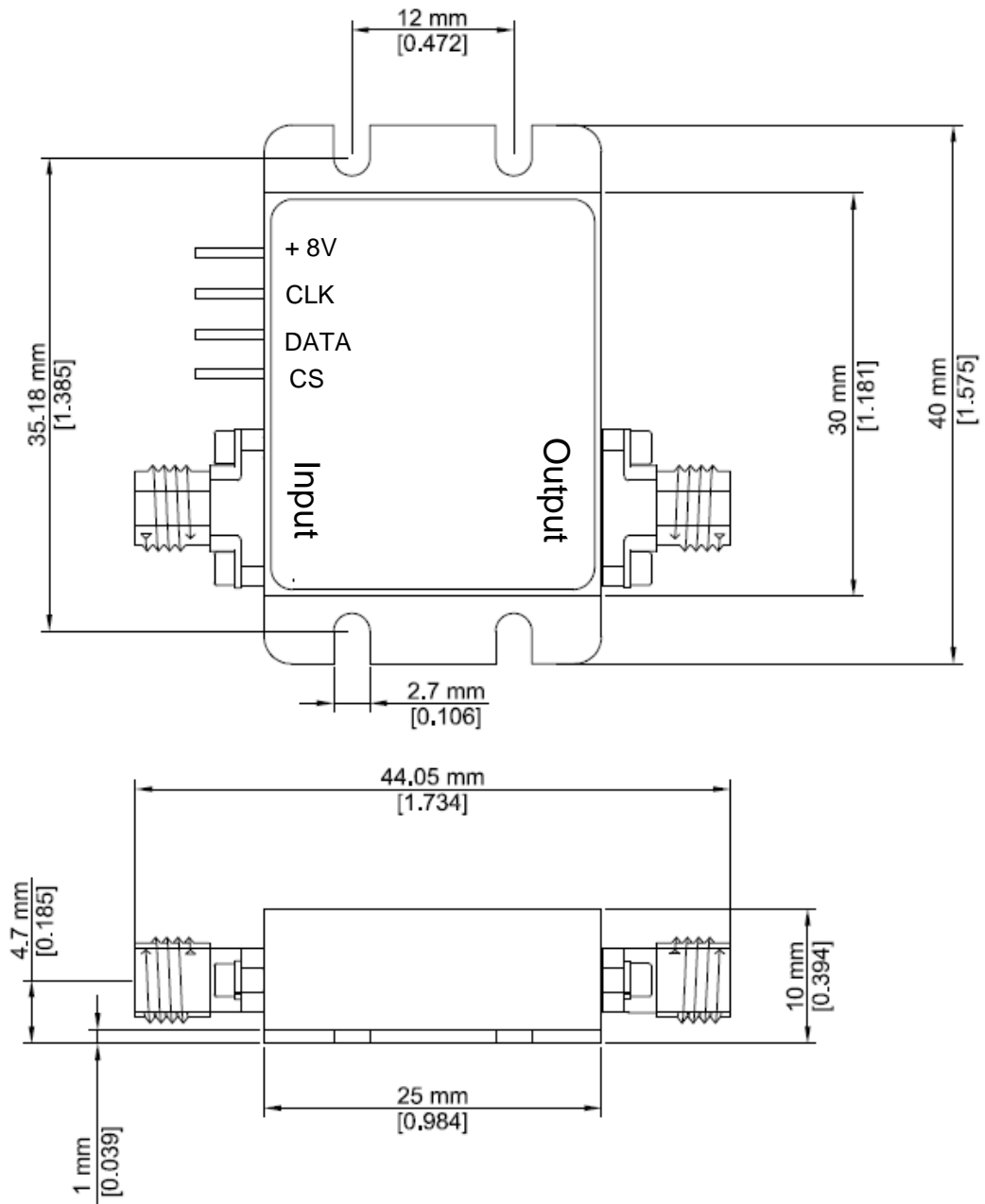


Serial Mode Truth Table

Control Voltage Input					Attenuation State RF1 - RF2
P4 16 dB	P3 8 dB	P2 4 dB	P1 2 dB	P0 1 dB	
High	High	High	High	High	Reference I.L.
High	High	High	High	Low	1 dB
High	High	High	Low	High	2 dB
High	High	Low	High	High	4 dB
High	Low	High	High	High	8 dB
Low	High	High	High	High	16 dB
Low	Low	Low	Low	Low	31 dB

Any combination of the above states will provide an attenuation approximately equal to the sum of the bits selected.

Package Outline: M010 SMA Connectorized mm (inches)



Model Number	Description	Hermeticity	Package
AMT-A0073	SMA Female	Non-Hermetic	Outline: M010

Contact us for custom configurations and special requirements.

Our highly experienced team of engineers can quickly identify and implement innovative solutions using latest technology to improve performance and reduce cost.

- Add additional functionality: Input limiter, Temperature compensation, Amplitude/Phase matching, Amplitude/Phase Tracking, Automatic Gain control, Gain sloping, Bypass path, Specific supply voltage, Regulation, Power detector, Health status, and others
- Integrated: Filters, Switches, Limiter, Digital attenuator, Phase shifter, Microcontroller, Multiple amplifiers, Switch matrix, Comb generators and others
- Mechanical: Custom packages - Surface Mount, Connectorized, Waveguide, Carrier, Drop-in, Hermetic and others

Agile Microwave Technology Inc is the logical choice for all your commercial or military RF/Microwave components/module requirements.

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